is undivided the grain of wheat is said to be *Monocotyledonous*" (p. 42). Not even the solemn name of the Revised Code can enable us to digest this without distress.

Plant-Life. Popular Papers on the Phenomena of Botany. (London: Marshall Japp and Co., 1881.)

THIS is a most attractive-looking book by the same author as the dismal little tractate just noticed. It might have been hoped that it would have made clear some of its dark sayings. But they all seem to be *ipsissimis verbis*, sugared over with copious extracts from all sorts of people, from Thoreau and Kingsley to Mr. Worthington Smith, Dr. Masters and Mr. Darwin. On p. 30 we have "The carbon absorbed from the air is combined with the cell-sap and forms a substance called starch," which is even harder doctrine than anything in the "Easy Lessons." Much is said about *Equisetaceæ* and the hygroscopic movements of the elaters of their spores. An unfortunate microscopist is quoted from *Science Gossip* of such a remote date as 1878, who is of opinion that "the ultimate cause of this movement is quite unknown . . . . most probably it takes place by the contraction and expansion of the cells of which the elaters are composed." Of course it is well known that the spores are unicellular and the elaters are simply strips of the spirally torn outer cell-wall. The book, with all its blundering accounts of *Englena* (sic), *Claydonia* (sic), the "lovely *Closterium*" which "consists of two cells," and the like, may stimulate the curiosity of those who know nothing of plants to know more and better. It is at any rate interesting to find that Prof. Schwendener's lichen-theory has found its way to popular books, even though it is introduced with the remark that "concerning" gonidia "a humorous theory was promulgated a few years ago, but met with the ridicule it deserved." The book has 148 illustrations drawn by the author, which scarcely do justice to the "specially prepared rolled paper" provided for them.

The London Catalogue of British Mosses and Hepatics. Published under the direction of the Botanical Record Club. Second Edition. (London: David Bogue, 1881.)

THIS is a handy list on the well-known model of that formerly issued by Mr. Hewett Cottrell Watson for British flowering plants. It gives the distribution through the eighteen provinces into which Mr. Watson divided Great Britain for the purpose of ascertaining the range of British plants.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Dr. W. B. Carpenter and Mr. W. I. Bishop

I AM sorry to find that Dr. Carpenter is "greatly surprised" at my allusion to the effect which has been produced by the circulation of his letter to Mr. Bishop, for in making that allusion I was under the impression that this letter had been put to a use other than that which Dr. Carpenter could have either intended or desired. If, as it now appears, I was wrong in entertaining this impression, it is needless to say that I am willing to apologise for having so far given it public expression; and in this case I can only infer that my error arose from an unfortunate difference in the estimate which we have respectively formed touching the scientific importance of the phenomena which Mr. Bishop has displayed. Such physiological and psychological interest as these phenomena present appeared to me to call for investigation in the ordinary way, *i.e.* by one or a few competent persons; it did not occur to me that they were of so much scientific value as to call for such "an assembly of gentlemen" as that which met at Bedford Square. Therefore, in writing my report, I took it for granted that Dr. Carpenter would have concurred in the "regret" which I expressed that his friendly recommendation should have been, as I thought, so far misused by Mr. Bishop as to constitute a general advertisement to scientific men; and my expression of regret was thus intended to show that I did not suppose Dr. Carpenter was to be considered intentionally responsible for the excitement which Mr. Bishop has succeeded in creating. It would no doubt have been wiser had I ascertained Dr. Carpenter's views upon this subject before assuming that they were the same as my own, and I do not yet quite understand whether he considers Mr. Bishop's manifestations worthy of all the attention which they have received. But in any case I hope that Dr. Carpenter will accept as more satisfactory an expression of further "regret," when I say I am very grieved to find that my allusion to his relations with Mr. Bishop, although intended as a friendly allusion, does not appear to have met with his approval.

GEORGE J. ROMANES

Re W. I. Bishop

LET any one read carefully Dr. Carpenter's account of the card trick exhibited to him by Mr. Bishop; let him suppose that Mr. Bishop had two packs of cards, the one an ordinary pack for exhibition to the company, and the other a pack containing fifty-two cards, all alike (the backs of both packs being of the same pattern). Let Mr. Bishop now perform the trick with cards from the latter pack, and his success can be readily explained. But grant that Mr. Bishop had only one pack of ordinary cards: even then it is possible that the explanation of the trick is not hard to find.

Dr. Carpenter allows that Mr. Bishop *may* have known where the selected card was placed. Take Dr. Carpenter's diagram on p. 188, and let No. 11 be the card known to Mr. Bishop, and which is to be finally discovered by Dr. Carpenter. "Drop your left hand on any row you wish *taken away*," says Mr. Bishop to Dr. Carpenter. Suppose, *by chance*, B, D, and A successively dropped on and removed, as in the instance given by Dr. Carpenter, then the upper pair of row C, then 15, we have 11 left and the trick done.

Suppose that C is selected first. Mr. Bishop may now assure Dr. Carpenter that the card wanted is in that row, and that he has forced Dr. Carpenter to select it. The chances are equal that Dr. Carpenter will in his next selection drop on that pair in row C, which includes 11. Should Dr. Carpenter in his third choice drop on 11, a most convincing proof of Mr. Bishop's will-compelling power will have been exhibited.

Should Dr. Carpenter however drop on 15, Mr. Bishop has merely to ask him to put it aside, and turning up the remaining card to exhibit it as the chosen and identified card. By a combination of the two methods of removing and leaving, Mr. Bishop can provide for all cases, and can perform a trick well known to schoolboys.

Dr. Carpenter, as I read his letter, tells us how Mr. Bishop acted when he himself was the subject of the experiment. If Dr. Carpenter can declare that the rows of cards, pairs of cards, and single cards *dropped in* were *in all three experiments* removed, I must confess that the laws of probabilities are against me, and that there seems to be strong proof of Mr. Bishop's power of *will-compelling*, a power which, as far as I have heard, Mr. Bishop has not yet publicly claimed to possess.

If Mr. Bishop *did not* know where the selected card was placed, Dr. Carpenter must invent a name for Mr. Bishop's new power of discovering a card, the position of which neither Mr. Bishop nor "the subject of the experiment" knew.

We can all regret with Dr. Carpenter "that Mr. Bishop did not offer for like careful testing experiments," &c.

I had the pleasure of attending a *public* performance given by Mr. Bishop in Edinburgh, on which occasion Mr. Bishop, much to the entertainment of a crowded hall, exhibited the legerdemain by which he had duped the subjects of, I believe, the before-mentioned experiments.

At this entertainment Mr. Bishop also showed how spiritualists performed such feats as knocking nails into boards, putting rings on scarves, &c., while their hands were tied together behind their backs and secured to a post. Prof. Turner, of the University of Edinburgh, explained to the spectators (no doubt at Mr. Bishop's request) that Mr. Bishop *seemed* to be enabled to perform those feats by the peculiar conformation of the bones and muscles—perhaps both—of his shoulder and arm.

We are told by newspaper correspondents that to this physical gift Mr. Bishop has added the power of reading and getting pictures of his subjects' thoughts, and now Dr. Carpenter endows him with the power of controlling the wills of his subjects, or—"*may*" teste—with some unnamed power still more mysterious. To Mr. Bishop as the successor of the Westminster whale or of Master Pongo, no one can have the slightest objection. Mr. Bishop as a *great* scientific phenomenon will, I fear, require better backing than the *careful testing* of Dr. Carpenter, and letters of introduction from scientific and medical men in Edinburgh who received Mr. Bishop, and in their turn gave him letters of introduction as a clever conjuror who performed by mechanical means feats of strength and agility attributed by spiritualists to their immaterial familiars.

THOMSON WHYTE

Merchiston Castle School, Edinburgh, July 2

Mind-Reading versus Muscle-Reading

SEVERAL years ago I had the opportunity of witnessing in a private circle of friends some experiments on so-called "thought-reading," even more striking than those recently described in your columns and elsewhere. An attentive observation of these experiments led me to question the accuracy of that explanation of the phenomenon with which Dr. Carpenter has made us so familiar, namely, unconscious muscular action on the one side, and unconscious muscular discernment on the other. After making the most extravagant allowances for the existence in some persons of a muscular sense of preternatural acuteness, here still remained a large residuum of facts wholly unaccounted for on any received hypothesis. These facts pointed in the direction of the existence either of a hitherto unrecognised sensory organ, or of the direct action of mind on mind without the intervention of any sense impressions. Such startling conclusions could not be accepted without prolonged and severe examination, and it was solely in the hope of stimulating inquiry among those who had more leisure and more fitness for the pursuit than myself that I published the brief record of my experiments which, some years ago, brought derision and denunciation upon me. As no physiologist came forward to give the subject the wide and patient inquiry it demanded, I went on with the investigation, and for five years have let no opportunity slip which would add to the information I possessed. A letter addressed to the *Times*, asking for communications from those who had witnessed good illustrations of the "willing game," brought me in, at the time referred to, a flood of replies from all parts of England, and down to the present time fresh cases are continually coming under my notice. Each case that seemed worthy of inquiry was, if possible, visited and investigated either by myself during the vacation, or by a friend on whom I could rely. It is true that many long journeys have been taken and much time has been spent without a commensurate reward, but this was to be expected. Still, after casting out cases which might or might not have been due to "muscle-reading," there remained abundant evidence to confirm my belief in the insufficiency of Dr. Carpenter's explanation. Until this evidence is published, which it will shortly be, and the accessible cases are examined and reported upon by a competent and impartial committee, I simply ask the public to suspend their judgment on this question. And to show that this is not an unreasonable request on my part, I here give a few particulars of a remarkable case which reached me only a few months ago, and was carefully investigated by myself last Easter.

A clergyman in Derbyshire has five young children, four girls and one boy, aged from nine to fourteen years, all of whom are able to go through the ordinary performances of the "willing game" rapidly and successfully, *without the contact of the hands or of any communication besides the air between the person operating and the subject operated on.* More than this, letters and words, or names of places, of persons, and of cards, can be guessed with promptness and accuracy; the failures in any examination not amounting to one in ten consecutive trials. The failures, I am assured by the father—and there is no reason to doubt his veracity—form a far smaller fraction when the children are not embarrassed by the presence of strangers; for example, the parents assured me that their children, before I arrived, told correctly seventeen cards chosen at random from a pack, without a single failure, and after that correctly gave the names of a dozen English towns indiscriminately selected. I will however only ask attention to what came under my own observation, which in brief was as follows:—

One of the children, Maud, a child of twelve, was taken to an adjoining room, and both the doors between fastened. I then wrote on paper the name of some object *not in the room* (to prevent unconscious guidance by the *eyes* of those who knew the thing selected), and handed this paper round to those who were present. Not a word was allowed to be spoken. I myself then recalled the child, placed her with her back to the company, or sometimes blindfolded her before bringing her into the room, and put her in a position where no whisper or other private communication could reach her undetected. In from two to twenty seconds she either named the object I had written down (the paper, of course, being concealed) or fetched it, if she could do so without difficulty. Each child was tried in succession, and all were more or less successful, but some were singularly and almost invariably correct in their divination of what I had written down; what was more curious, the maid-servant was equally sensitive. This led me to try other experiments with those who knew the words chosen: and the father was found to be pre-eminently the best willer, and to be in fact almost as necessary for success as the sensitive "guesser"; further experiments showed that a battery of minds, all intently fixed on the same word, was far more successful than one or two alone. Apparently a *nervous induction* of the dominant idea in our minds took place on the passive mind of the child, and the experiments recalled the somewhat analogous phenomena of electric and magnetic induction. There seemed to be a veritable exoneural action of the mind.

I am quite prepared for the chorus of sceptical laughter which will greet this statement. That there should be disbelief is quite natural; a desire for further inquiry is all I ask for. To those who, with a single eye for truth, even if it be in collision with received opinions, are anxious to know if every possibility of error or deception was removed, permit me to add the following additional experiments. Instead of allowing the child to return to the drawing-room, I told it to fetch the object as soon as it "guessed" what it was, and *then* return with it to the drawing-room. Having fastened the doors I wrote down the following articles one by one with the results stated: *hair-brush*, correctly brought; *orange*, correctly brought; *wine-glass*, correctly brought; *apple*, correctly brought; *toasting-fork*, wrong on the first attempt, right on the second; *knife*, correctly brought: *smoothing-iron*, correctly brought; *tumbler*, correctly brought; *cup*, correctly brought; *saucer*, failure. On being told this object the child said, "Saucer came into my head, but I thought you would never ask for that after asking for a cup, so I wasn't sure what it was." Then names of towns were fixed on, the name to be called out by the child outside the closed door of the drawing-room, but guessed when fastened into the adjoining room. In this way Liverpool, Stockport, Lancaster, York, Manchester, Macclesfield were all correctly given; Leicester was said to be Chester; Windsor, Birmingham, and Canterbury were failures. I might give many other similar trials, for I spent three long evenings testing the children; but these results and the attempts made to answer the many questions that at once started to the mind, such as the effect of distance, &c., must be left for the present. Meanwhile, at the suggestion of Mr. Romanes, I have arranged for a small committee of scientific experts to visit the family, and verify or disprove the conclusion to which I have arrived, which is certainly opposed to that drawn by Mr. Romanes from his experiments on Mr. Bishop (NATURE, vol. xxiv. p. 172). Whether Dr. Carpenter will find in this case "a precise confirmation" of everything he has said on the subject I cannot say.

W. F. BARRETT

July 3

A Case of Slow, Sub-Tropical Discharge of Earth-Electricity, and the Sun Recognisant thereof

IN the course of yesterday afternoon, in the midst of a sky otherwise clear and exquisitely blue, a large cloud of unusual shape and character began to form in the upper regions of the atmosphere vertically over, but very far above, the southern slope and even most elevated mountain tops of Madeira, and remaining there, as it did, most fixedly more than half the day, so contrary to the locomotive habits of ordinary clouds, it soon attracted the attention, and presently the fears, of most of the inhabitants.

As seen from this place, between 1h. and 3h. p.m., there was little more than a single dense cloud of peculiarly rounded outline and somewhat elliptical figure, stretching from the western horizon to within 10° or 15° of the zenith; but as time advanced,